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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/601,885	06/24/2003	Tai-Ning Tang	GRE 109	1297

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RABIN & BERDO, P.C.  
Suite 500  
1101 14th Street, N.W.  
Washington, DC 20005

EXAMINER

SOUW, BERNARD E

ART UNIT PAPER NUMBER

2881

DATE MAILED: 02/19/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

10/601,885

Applicant(s)

TANG, TAI-NING

Examiner

Bernard E Souw

Art Unit

2881

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE \_\_\_\_ MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 24 June 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1 is/are rejected.
- 7) ☒ Claim(s) 1 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 24 June 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. §§ 119 and 120**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 13) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.
- a) ☐ The translation of the foreign language provisional application has been received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) \_\_\_\_
- 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other:

## DETAILED ACTION

### *Specification*

1. The lengthy specification has not been checked to the extent necessary to determine the presence of all possible minor errors. Applicant's cooperation is requested in correcting any errors of which applicant may become aware in the specification.

2. The title of the invention, "*Optical fiber light-transmissive structure*" objected to, because it is not descriptive. *An optical fiber is inherently structured to be light-transmissive.* A new title is required that is clearly indicative of the invention to which the claims are directed.

The following title is suggested: "*Low-cost side-coupling for optical fiber bundles*".

### ***Claim Rejections - 35 USC § 112***

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

3. Claim 1 is rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter, which was not described in the specification in such a way as to enable one skilled in the art to

Art Unit: 2881

which it pertains, or with which it is most nearly connected, to make and/or use the invention.

The processing method of "rolling for producing sophisticated changes at the refracting planes at an interior of the optical fiber cord" is not adequately described in the specification. Specifically, the methods of "rolling" as well as the "sophisticated changes" thereby produced were not described in the specification in such a way as to enable one skilled in the art to make and/or use the invention.

### ***Claim Rejections - 35 USC § 112***

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter, which the applicant regards as his invention.

4. Claim 1 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 1 recites the limitation of "light-emitting segment", but immediately followed by "for light beam entering an input end of the optical fiber", the two limitations being contradictory to each other, since if the fiber segment is truly light-emitting, then there is no need for a light beam to enter into the fiber (i.e., from outside). In fact, Applicant's device does not even need any auxiliary light source, if the invented fiber segment were truly "light-emitting".

The Applicant must have meant something else fully different than "light-emitting segment". Appropriate correction is required.

5. Claim 1 is also rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. The claim limitation "*producing sophisticated changes at the refracting planes at an interior of the optical fiber cord*", fails to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Specifically, it is unclear what kind of "changes" is meant with "*sophisticated changes*", and further, it is unclear what is meant with "*refracting planes (at the interior of the optical fiber cord)*", since the optical fiber is known to have a circular cross section, and hence, does not have any "*refracting planes*". Appropriate explanations are required.

***Claim Rejections - 35 USC § 103***

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. Claim 1 is rejected under 35 U.S.C. 103(a) as being unpatentable over Shaw (USPAT 4,473,270) in view of Newport Tutorial and Weber ([http://www.assemblymag.com/CDA/ArticleInformation/features/BNP\\_Features\\_Item/0,6493,100554,00.html](http://www.assemblymag.com/CDA/ArticleInformation/features/BNP_Features_Item/0,6493,100554,00.html)), and further in view of Stern (USPAT 5,771,321).

Shaw discloses in Fig.1 an optical fiber light-transmissive structure 12a or 12b, *the (coupling) structure 10 having an interaction region 32* disposed at any appropriate position of the optical fiber cord 12a or 12b, as can be seen in Fig.1 and Fig.5, the light-transmissive structure's interaction region 32 having been processed for producing sophisticated changes at refracting *[planes] surfaces* at an interior of the optical fiber 12a or 12b, as expressly recited in Col.5/ll.16-27, thereby forming a *[light-emitting] evanescent field light-input side-coupling* segment 32 shown in Fig.1-4, as expressly recited in Col.5/ll.28-42, for light beams entering an input end A of the optical fiber cord 12a to be transmitted (to the other optical fiber cord 12b) via the *[light-emitting] evanescent field light-input side-coupling* segment 32, as expressly recited in Col.5/ll.48-53.

Shaw's evanescent field light-input side-coupling segment 32 is made by producing sophisticated changes at refracting *[planes] surfaces*, specifically by removing the cladding and further assisted by refractive index matching, as recited in Col.9/ll.23-33 & Col.11/ll.65-68 and Col.5/ll.28-42, instead of by processing the segment by rolling, as recited in Applicant's claim.

Evanescent field light-input side-coupling as generally well known in the art is conventionally made by diverse methods, such as removing a portion of the cladding by etching, as taught by Shaw. However, it is also well known in the art that evanescent field side-coupling into optical fibers can be made by microbending over a rough surface as taught by Weber, as recited in lines 9-12, and by Newport Tutorial, lines 5-8, or by making the fiber or optical waveguide surface itself rough, in order to enhance light

scattering and coupling efficiency, as taught by Stern in Col.45/II.31-42\, i.e., by using rough surface 32 shown in Fig.18E. Stern further teaches that coupling-enhancing rough surfaces can be produced not only by etching, but also by many alternative processes, such as stamping and rolling, as expressly recited in Col.45/II.51-58.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to make Shaw's side-coupling segment by roughening the fiber surface by Stern's rolling process, in order to enhance light scattering and hence increase coupling efficiency, as taught by Stern in Col.45/II.31-42 & 51-58.

One of ordinary skill in the art would have been motivated to modify Shaw's removed cladding by Stern's scattering-enhancing rough surface, since the scattering- and coupling-enhancing effect of such rough surfaces is essentially the same as the effect of fiber microbending over a rough surface, as taught by Weber and Newport Tutorial, wherein a cross-talk between adjacent fibers is essentially the same as Shaw's and Stern's evanescent field side-coupling.

### ***Communications***

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Bernard E Souw whose telephone number is 571 272 2482. The examiner can normally be reached on Monday thru Friday, 9:00 am to 5:00 pm..

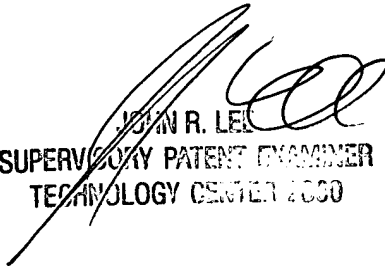
If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, John R Lee can be reached on 571 272 2477. The central fax phone

Art Unit: 2881

number for the organization where this application or proceeding is assigned is (703) 872-9306 for regular communications as well as for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703 308 0956.

bes  
January 30, 2004

  
JOHN R. LEE  
SUPERVISORY PATENT EXAMINER  
TECHNOLOGY CENTER 2000